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VCC-28 USB Desktop Audio Device Installation Guide



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9 Austin Drive, Marlborough, CT 06447 (860) 295-8100 www.essentialtel.com sales@essentialtel.com

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Introduction

ETC's VCC-28 USB programmable microphone is designed to integrate with Twisted Pair Solutions' WAVE Dispatch Communicator. In conjunction with a wireless headset and phone, the VCC-28 not only allows an operator to access all the functions of a dispatch software, but provides multiple hardware features. This powerful tool has five mechanical/hardwired keys to allow toggling between modes, twelve software hot-keys to control panel functions, and twelve software hot-keys that are user programmable while in WAVE. Features include the following:

- RJ-9 ports for Phone and Handset
- RJ-25 port for a Wireless Headset Device (such as Plantronics CA12CD)
- Speaker Out Jack
- Foot Switch Input Jack
- Record Out Jack
- USB 1.0 or 2.0 compliant port
- Enumeration LED
- Record Out Switch for recording options
- Microphone
- Speaker Volume Control Knobs
- Speaker Activity Indicator LEDs

This guide will cover configuring the VCC-28 in Windows XP Pro, Windows 7, and WAVE Dispatch Communicator (the basics only). Linux is noted in this manual, although the VCC-28 has not been tested with it. The key/functions described in this manual assume WAVE Dispatch Communicator to be installed and running. [The screen shots in this guide were taken with a VM-4; your screens will show a VCC-28 device name.](#)

IMPORTANT: Windows and USB Sound Device Settings

In Windows OS (all versions through Vista) the sound device is not seen as a removable device. When a USB sound device is removed, the Registry corrupts. Upon reconnection, Windows defaults back to the sound device and the settings hard-coded in the chip-set and does not retain the USB settings. [To work around this issue, please see the Appendix Section of this Guide.](#)

In Windows 7, Microsoft addressed the problem of USB sound devices defaulting back to hard-coded levels in the chip-set when they are disconnected and reconnected. The levels set for the device will remain the same if you unplug it then plug it back in. However, on a computer with multiple sets of speakers (internal and external), Windows 7 will revert back to whatever speaker it sees as the default device. Upon reconnecting your ETC equipment, the system will recognize it but may not choose it as the active device. If your system does not see the ETC equipment as the default sound device, you still need to choose it each time the USB cable is disconnected.

Parts List

The VCC-28 (Figure A) comes equipped with a USB “A/B” 2.0 cable (Figure B), a four wire RJ-9 satin cord (*tab up - tab down*) (Figure C), and a six wire RJ-25 satin cord (*tab up - tab down*) to replace the PJ-7 connecting cord included with dispatch headsets (Figure D). An optional foot pedal is available (Figure E)



Figure A



Figure B



Figure C



Figure D



Figure E

VCC-28 Key Pad

The VCC-28 key pad (see Figure F page 6) has five **hardware keys** that control certain functions of the key pad. These keys are illuminated when they are active.

A Key Latch: Changes the number keys (1 thru #) from momentary into latching action. When the **Key Latch** key is illuminated (latched), the number key chosen (illuminated) will stay latched “ready”. When the operator initiates PTT from the VCC-28 keypad, headset adapter, footswitch, or software, the chosen channel will transmit. The same channel will stay ready until that key is pushed again to unlatch it, another channel is chosen, or the **Key Latch** function is turned off. IE: The operator wants channel 5 to stay ready for an extended period. He/She pushes the **Key Latch** key (which illuminates), then selects the 5 key (which illuminates). The operator can now use the PTT function from the VCC-28 keypad, headset adapter, footswitch, or software as needed to talk on channel 5. When he/she is done with channel 5, another channel can be chosen and latched ready, or the **Key Latch** key can be pushed and all keys will revert to momentary action.

B Head Set: Enables -or- disables the wireless headset. When this key is illuminated (latched), all available audio input is routed to the headset. When the **Head Set** key is not illuminated, the VCC-28 routes the USB audio to the external speakers, and the incoming phone audio to the phone handset. The headset PTT function is activated only when the **Head Set** key is illuminated (latched).

C Num Lock: Toggles the number keys (1 thru #) between numerical -or- programmed hot key. This key works the same as a traditional keyboard **Num Lock** key. When it is illuminated (latched), a number key acts like a numerical key and does not produce any programmed hot key sequence. When it is not illuminated, a number key will produce the programmed hot key sequence associated with it.

Num Lock overrides Key Latch IE: The operator has Key Latch illuminated (latched) and is PTT on channel 5. If he/she pushes Num Lock, channel 5 is disconnected and no longer active as a transmit channel.

D Phone Only: This key is only functional when the **Phone** key is illuminated (latched) and external phone calls are being routed to the wireless headset. The **Phone Only** key toggles between phone audio only -or- phone audio summed with USB audio getting through to the wireless headset. ALL transmitting is disabled when **Phone Only** is illuminated (latched).

E Phone: Determines how external phone calls will be routed. When this key is illuminated (latched), the telephone handset is bypassed and the phone call is routed directly to the wireless headset. The operator would pick up the handset to answer a call, set it aside, and use the headset to speak into and listen from. When the call is completed, the operator would put the handset back on the telephone cradle. This is necessary because the head set does not have the ability to physically pick up or hang up a phone call. When the **Phone** key is not illuminated, the phone handset works as a traditional handset (operator speaks into and listens from the handset) and the **Phone Only** key is N/A.

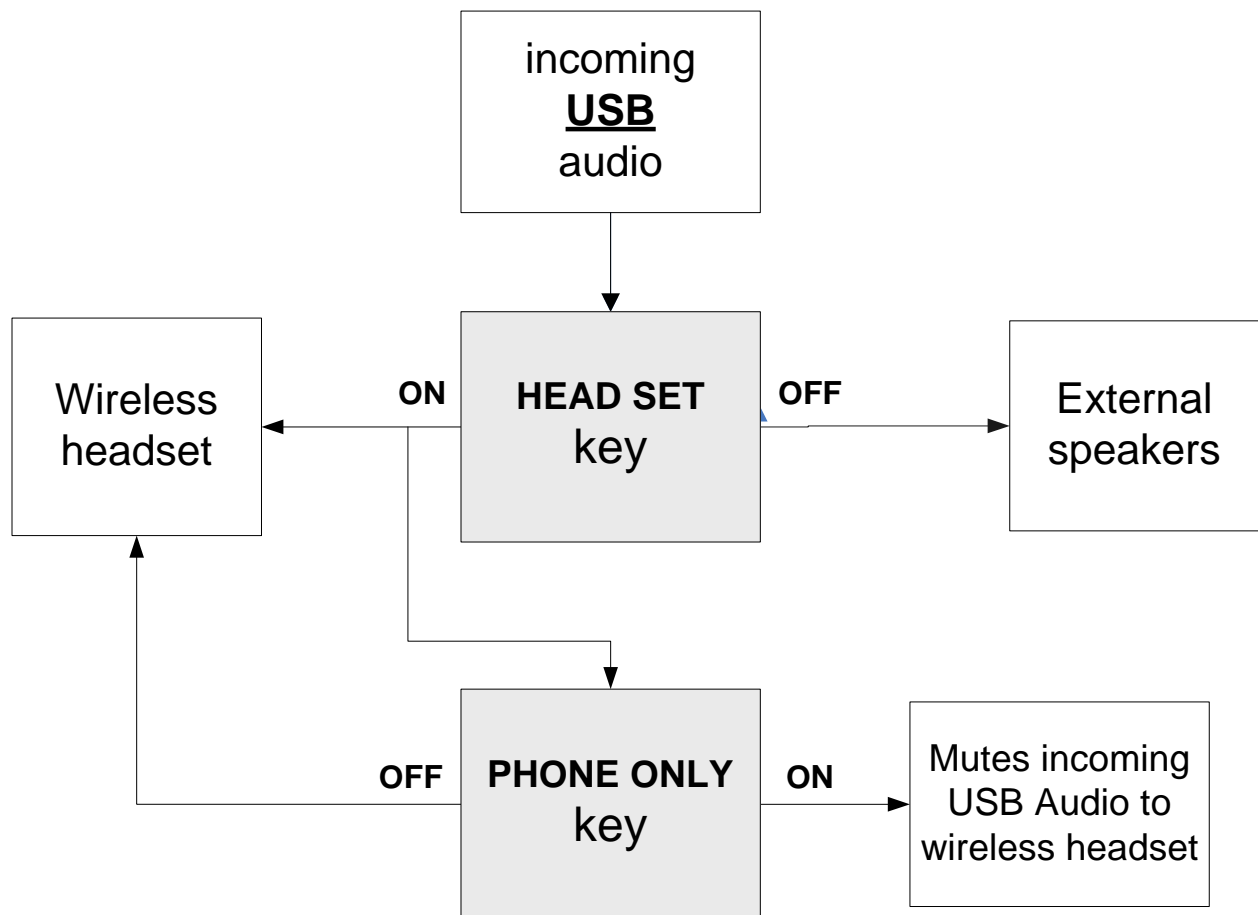
[For clarification of USB / PHONE audio paths and PTT Functional path, please see Flowcharts 1, 2 , 3, 4 on pages 7 , 8, 9. 10.](#)



Figure F

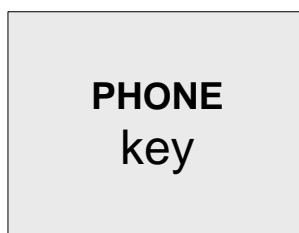
Incoming USB Audio

HEAD SET, PHONE ONLY, PHONE



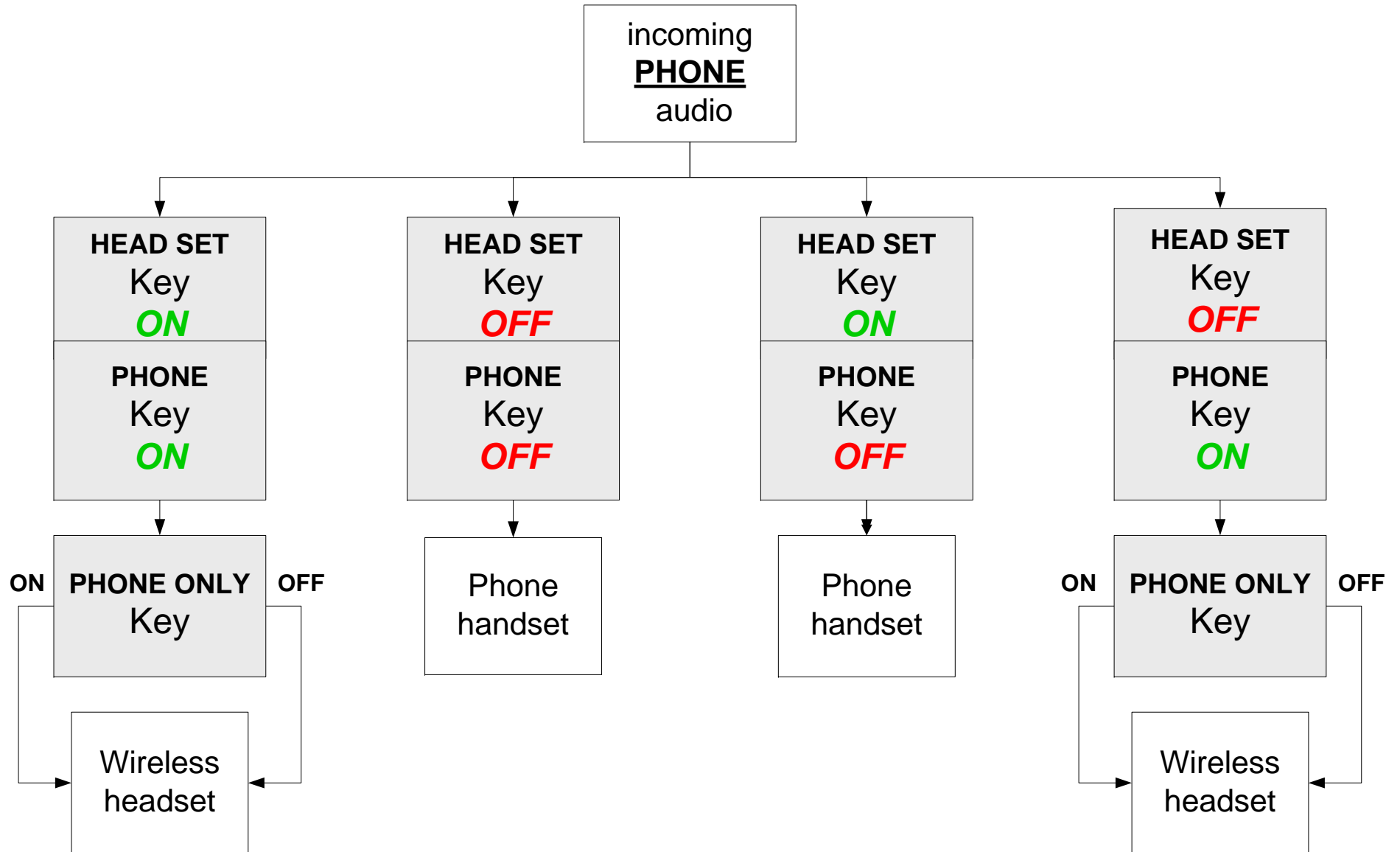
N/A

The PHONE key does not have any bearing on the incoming USB audio

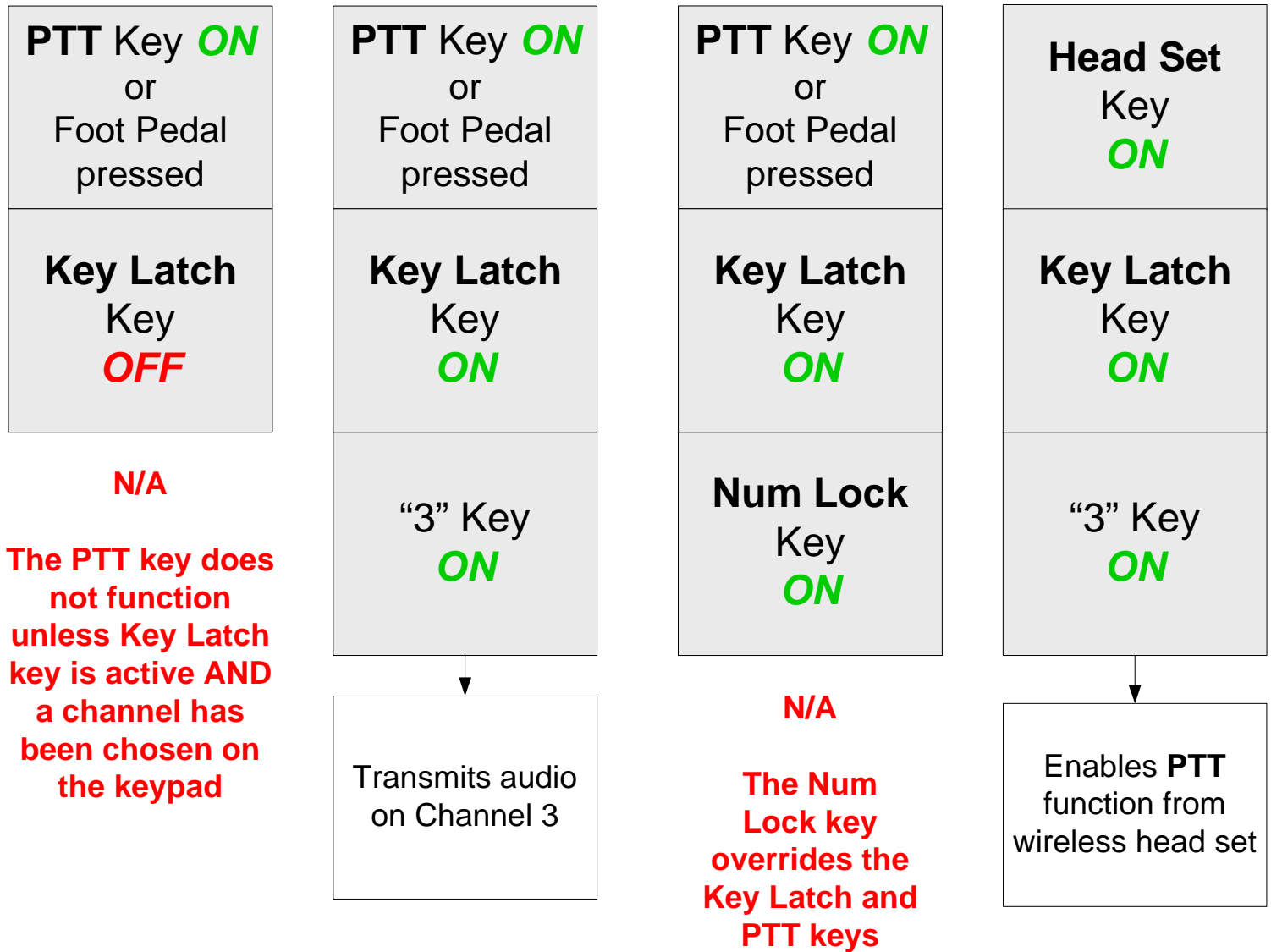


Incoming PHONE Audio

HEAD SET, PHONE, PHONE ONLY



PTT Functional Path



Transmit USB/PHONE Audio

Key Latch <i>ON</i>	Key Latch <i>ON</i>	Key Latch <i>ON</i>	Key Latch <i>ON</i>	Key Latch <i>OFF</i>
Head Set <i>ON</i>	Head Set <i>ON</i>	Head Set <i>ON</i>	Head Set <i>OFF</i>	Head Set <i>OFF</i>
"3" Key <i>ON</i>	"3" Key <i>ON</i>	"3" Key <i>ON</i>	"3" Key <i>ON</i>	"3" Key <i>ON</i>
Phone <i>ON</i>	Phone <i>ON</i>	Phone <i>OFF</i>	Phone <i>OFF</i>	Phone <i>OFF</i>
Phone Only <i>ON</i>	Phone Only <i>OFF</i>	Phone Only <i>OFF</i>	Phone Only <i>OFF</i>	Phone Only <i>OFF</i>

NO USB
TRANSMIT

Talk on
phone only
from the
headset

USB TRANSMIT
from
PTT
FOOTPEDAL
HEADSET

Talk on phone and
USB together at
same time from
headset

USB TRANSMIT
from
PTT
FOOTPEDAL
HEADSET

Talk on USB
from headset

Talk on phone
from handset

USB TRANSMIT
from
PTT
FOOTPEDAL

Talk on USB
from VCC-28
microphone

Talk on phone
from handset

USB TRANSMIT
from
pushing "3" key

Talk on USB
from VCC-28
microphone

Talk on phone
from handset

Num Lock mode Key Chart

The functionality of the VCC-28 keys in Num Lock mode (the **Num Lock** key is illuminated) is shown in Table 1. The number keys (1 through #) function as a normal key pad.

Key Label	Programming	Function
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9
0	0	0
*	*	Numpad *
#	#	Left Shift 3
Head Set	Hardware Key	Toggles Head Set: Enable -or- Disable
Num Lock	Hardware Key	Toggles Number (1 - #) Keys: Numerical -or- Programmed Hot Key
Phone Only	Hardware Key	Toggles Audio Input: USB audio disabled with phone audio only routed to head set -or- USB audio summed with phone audio routed to head set. Disables xmit.
New Call	Ctrl-Alt-Shift-x	Dial/Answer a call
Dial	Ctrl-Alt-Shift-w	Initiates the dialing of a new call
PTT	Ctrl-Alt-Shift-z	INOP : Over-ridden by Num Lock function
Phone	Hardware Key	Toggles Phone Audio Routing: Phone audio routed to handset -or- phone audio routed to head set
Mute Caller	Ctrl-Alt-Shift-u	Mute Caller
Mute Mic.	Ctrl-Alt-Shift-t	Mute Microphone for call
Busy	Ctrl-Alt-Shift-s	Stop taking incoming calls
Call Fwd	Ctrl-Alt-Shift-r	Forward incoming calls
Key Latch	Hardware Key	INOP : Over-ridden by Num Lock function
Xfer	Ctrl-Alt-Shift-n	Transfer a call
Join Conf	Ctrl-Alt-Shift-o	Add/Remove a call from conference
Clear Call	Ctrl-Alt-Shift-p	Release (hang up) phone
Hold	Ctrl-Alt-Shift-q	Place call on hold
Foot Pedal	Ctrl-Alt-Shift-z	INOP : Over-ridden by Num Lock function

Table 1

Hot Key mode Key Chart

The functionality of the VCC-28 keys in **Hot Key** mode (the **Num Lock** key is not illuminated) is shown in Table 2. The number keys (1 through #) function as user programmed hot keys.

Key Label	Programming	Function
1	Ctrl-Alt-Shift-a	These keys are user programmable while in WAVE Dispatch Communicator. Programming preferences are unique to a user's sign-in and profile.
2	Ctrl-Alt-Shift-b	
3	Ctrl-Alt-Shift-c	
4	Ctrl-Alt-Shift-d	
5	Ctrl-Alt-Shift-e	
6	Ctrl-Alt-Shift-f	
7	Ctrl-Alt-Shift-g	
8	Ctrl-Alt-Shift-h	
9	Ctrl-Alt-Shift-i	
*	Ctrl-Alt-Shift-j	
0	Ctrl-Alt-Shift-k	
#	Ctrl-Alt-Shift-l	
Head Set	Hardware Key	Toggles Head Set: Enable -or- Disable
Num Lock	Hardware Key	Toggles Number (1 - #) Keys: Numerical -or- Programmed Hot Key
Phone Only	Hardware Key	Toggles Audio Input: USB audio disabled with phone audio only routed to head set -or- USB audio summed with phone audio routed to head set. Disables xmit.
New Call	Ctrl-Alt-Shift-x	Dial/Answer a call
Dial	Ctrl-Alt-Shift-w	Initiates the dialing of a new call
PTT	Ctrl-Alt-Shift-z	Press/Hold to talk over selected channel
Phone	Hardware Key	Toggles Phone Audio Routing: Phone audio routed to handset -or- phone audio routed to head set
Mute Caller	Ctrl-Alt-Shift-u	Mute Caller
Mute Mic.	Ctrl-Alt-Shift-t	Mute Microphone for call
Busy	Ctrl-Alt-Shift-s	Stop taking incoming calls
Call Fwd	Ctrl-Alt-Shift-r	Forward incoming calls
Key Latch	Hardware Key	Latches number (1 - #) keys
Xfer	Ctrl-Alt-Shift-n	Transfer a call
Join Conf	Ctrl-Alt-Shift-o	Add/Remove a call from conference
Clear Call	Ctrl-Alt-Shift-p	Release (hang up) phone
Hold	Ctrl-Alt-Shift-q	Place call on hold
Foot Pedal	Ctrl-Alt-Shift-z	Press/Hold to talk over selected channel

Table 2

Hardware Connections (see Figure G, page 13)

HANDSET : The original telephone coil cord is used to connect the Hand Set to this RJ-9 port. This allows you to answer calls from a traditional telephone, but have them routed through the VCC-28 for recording purposes.

PHONE : The cable connecting the VCC-28 to the Phone base is an RJ-9 satin cord. ****ETC supplies this cable and it is necessary to maintain proper polarity between the VCC-28 and phone.****

HEADSET : The cable connecting the VCC-28 to the Wireless Headset base is an RJ-25 satin cord. ****ETC supplies this cable and it is necessary for connectivity between the VCC-28 and wireless headset.**** This cable replaces the PJ-7 coiled cable supplied with dispatch wireless headsets.

SPKR : External speakers plug into this jack.

FOOT PEDAL : An optional foot pedal plugs into this jack. The foot pedal acts as a PTT command. The foot pedal will PTT on any channel while the **Key Latch** function is active.

REC. OUT : This jack puts out an Analog signal at Line Level. It will connect to an external recording device. Depending on the **SEL** switch status, this jack records either USB radio output only -or- USB radio and VCC-28 microphone/head set audio (dispatcher's voice) output.

USB : A USB cable is plugged into this jack to connect the VCC-28 to a computer. Upon properly connecting the VCC-28 by USB cable, it will install automatically with Windows/Linux drivers when you power on your computer. Please note that it takes the system time to recognize new hardware has been hooked up, and that the VCC-28 should not be disconnected until the "New Hardware Installed" message is displayed.

SEL : This switch controls which audio is sent to the **REC. OUT** jack. In the RIGHT position (closest to **FOOT PEDAL** jack) only USB radio output is recorded. In the LEFT position (closest to **REC. OUT** jack) both USB radio and VCC-28 microphone/head set audio (dispatcher's voice) output are recorded.

PWR : This lights when the sound card successfully connects to Windows.

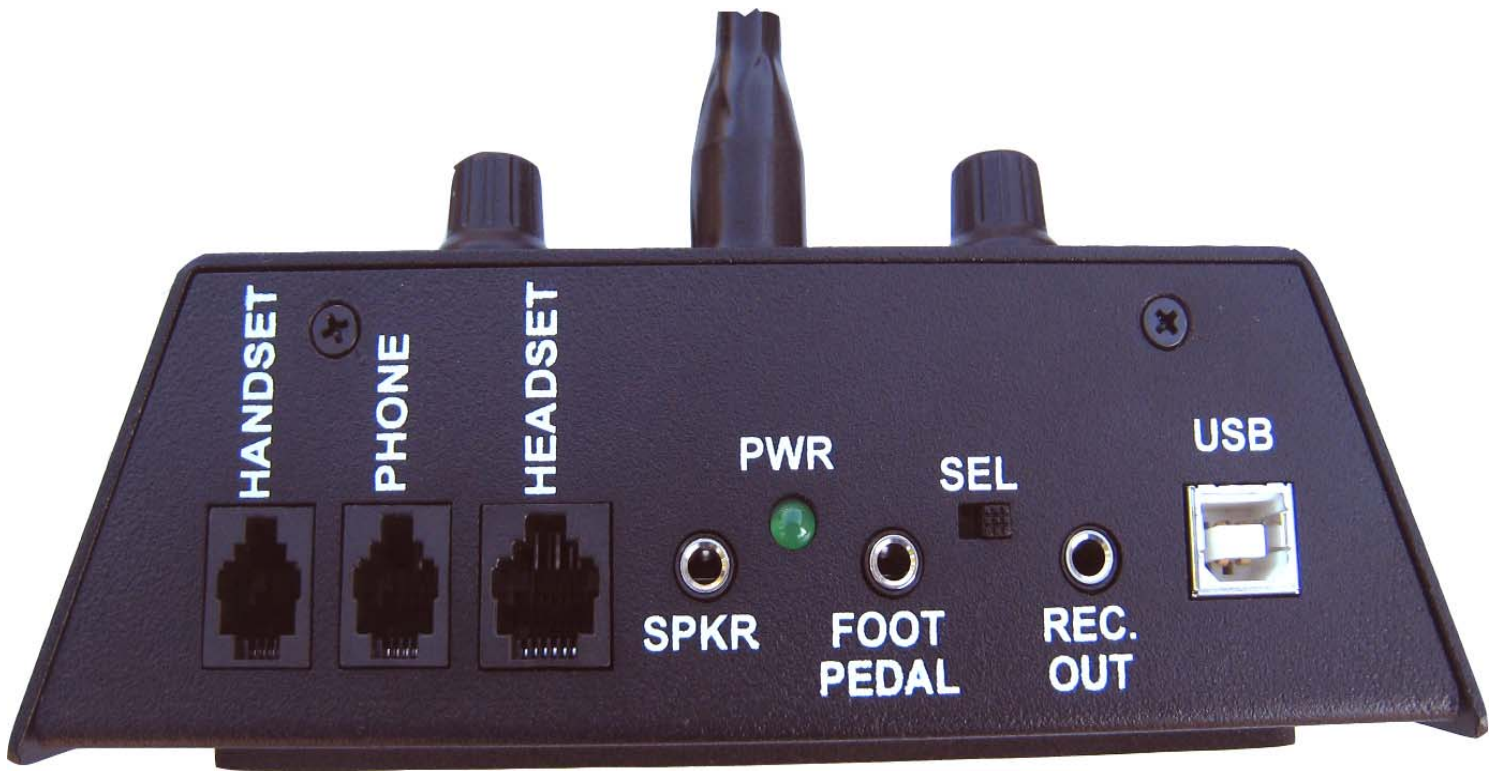


Figure G

Windows XP Audio Device Hardware Configuration

Click on Sounds, Speech, and Audio Devices icon located in the Control Panel (Figure 1).



Figure 1

Click on the Sounds and Audio Devices icon (Figure 2). Check “Place volume icon in the taskbar” box so you can access these settings quicker in the future if needed (Figure 3).

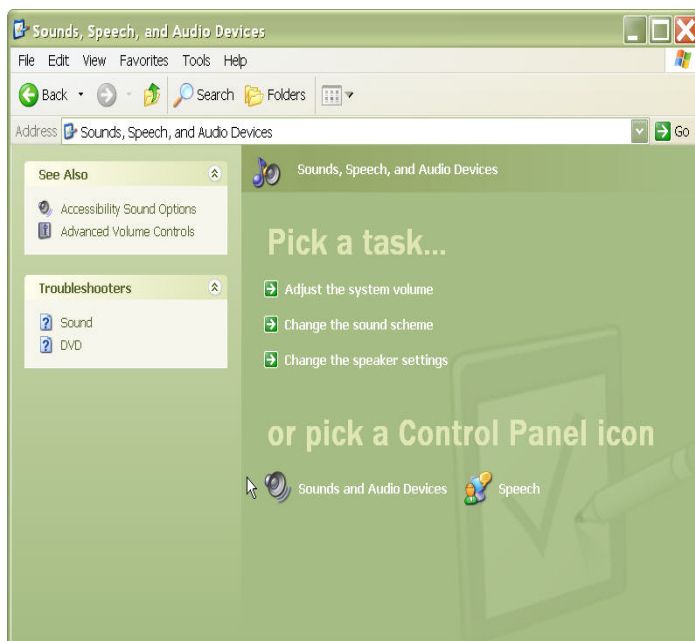


Figure 2



Figure 3

To ensure proper VCC-28 microphone performance, sound card settings must be adjusted after initial device installation (or sudden disconnect or power loss). Click on the Advanced button in the Device volume box (Figure 4). The ETC VCC-28 Speaker mixer window will open. If your window does NOT show a Microphone device you will need to activate it. From the Options drop down menu choose Properties (Figure 5)

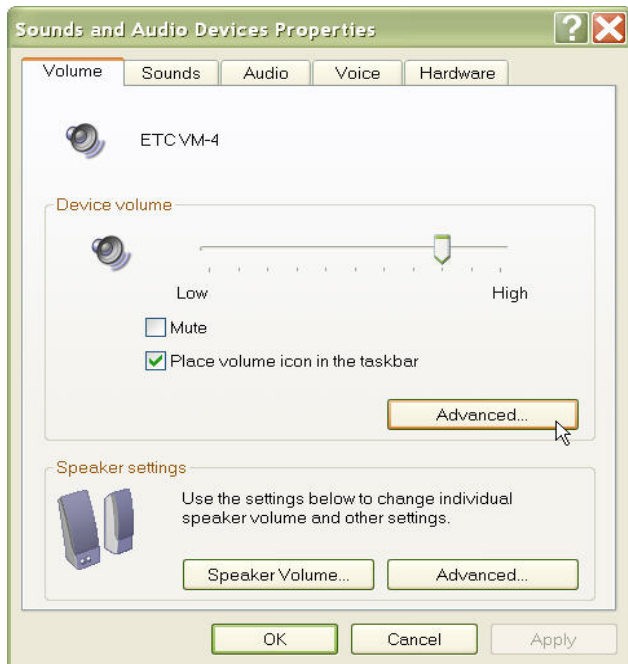


Figure 4

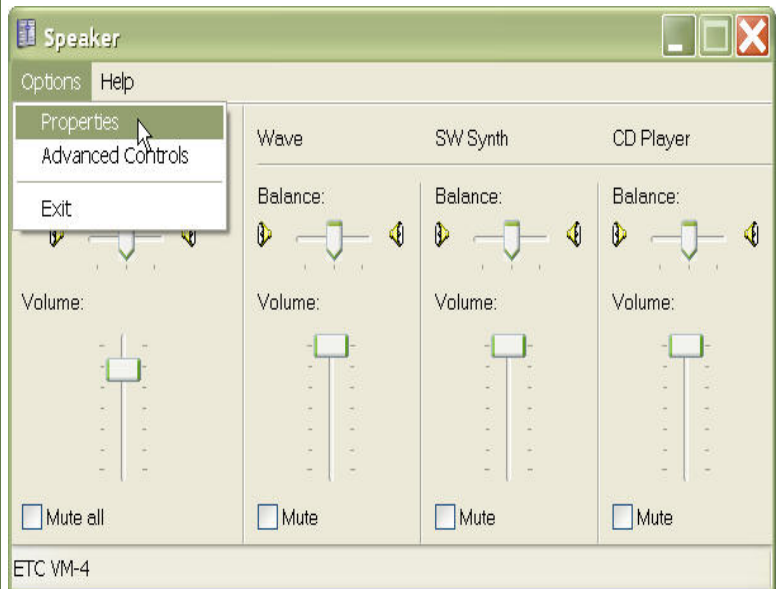


Figure 5

In the Properties window check the Microphone box (Figure 6) then click the OK button (Figure 7).

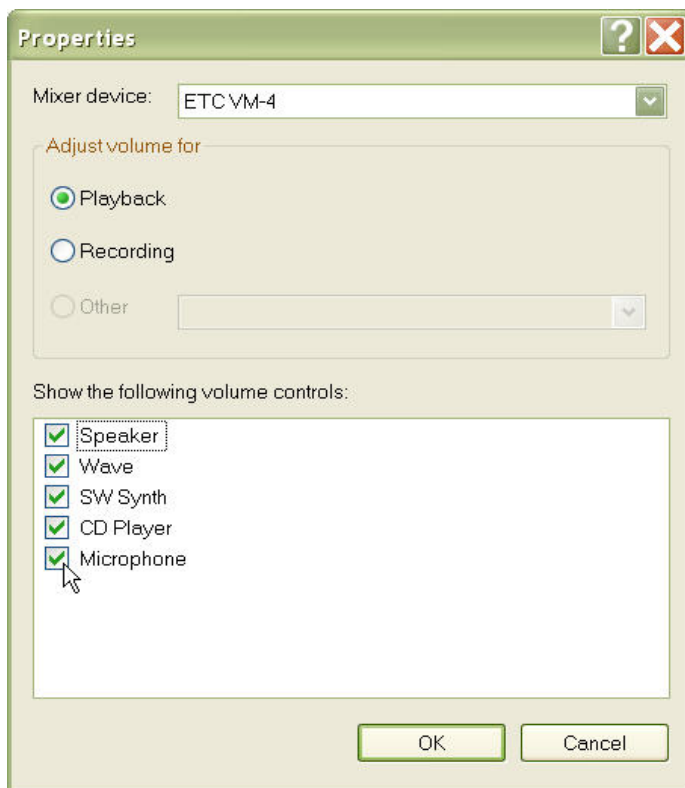


Figure 6

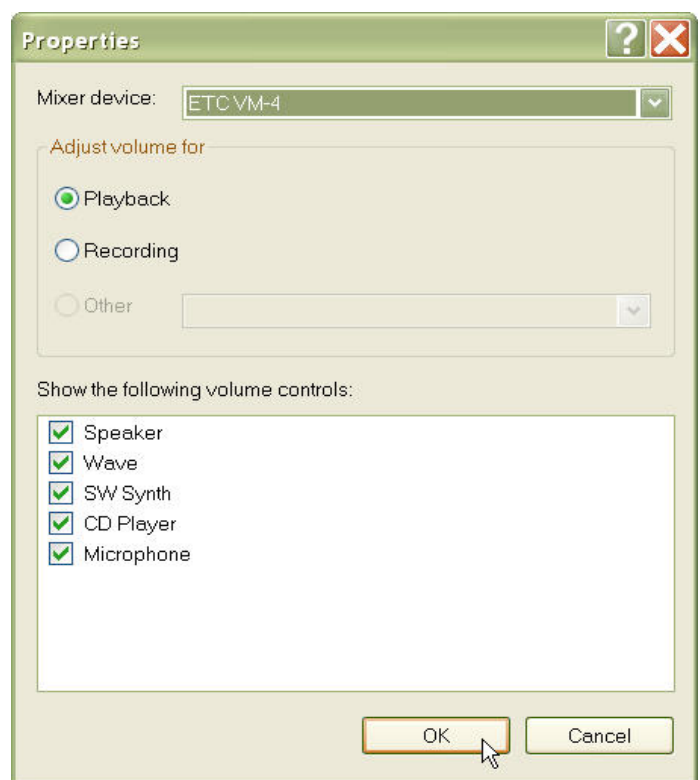


Figure 7

You will see a Microphone device for ETC VCC-28 in the Speaker window. Using your cursor, move the Speaker (master) volume lever up to the recommended playback level shown (Figure 8)

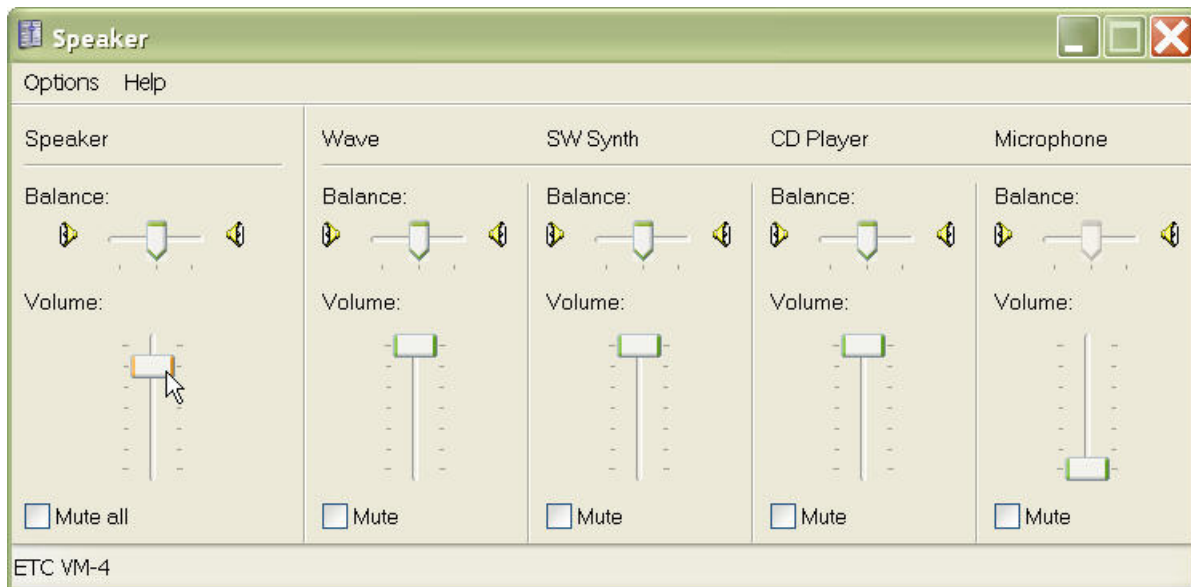


Figure 8

The Microphone volume lever must be down all the way and the Microphone Mute box must be checked (Figure 9)

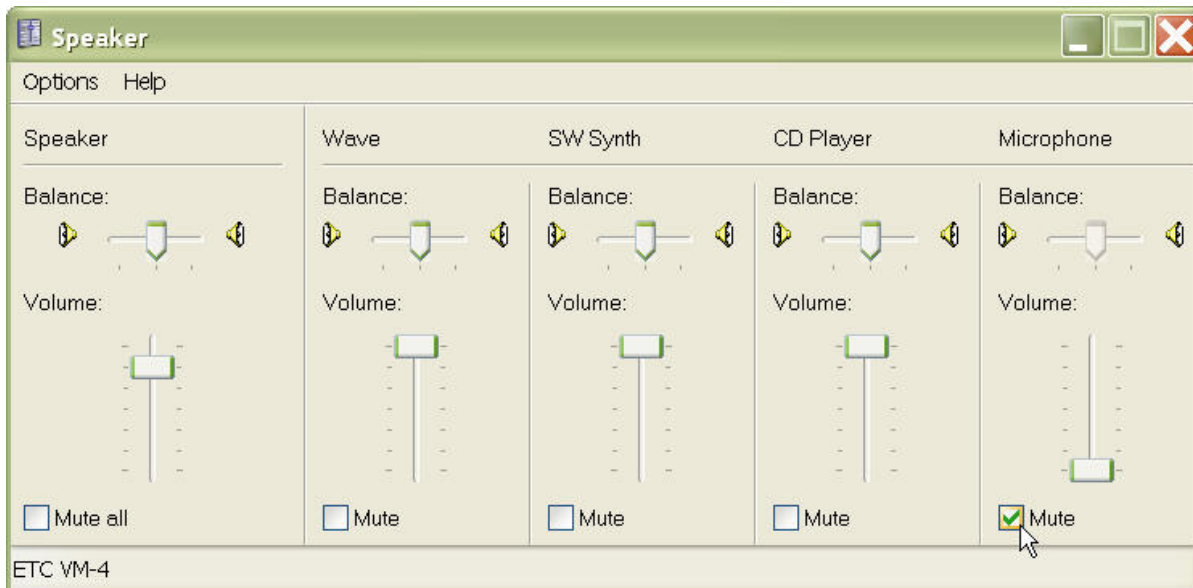
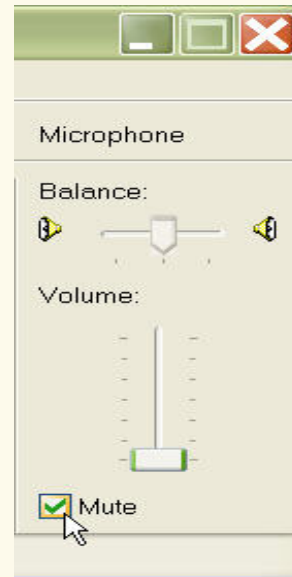


Figure 9

ATTENTION:
The microphone Mute box must be checked.

An unchecked Mute box will cause echo on the network and down-time for troubleshooting your installation.



The Recording volume for the VCC-28 can now be adjusted. From the Options drop down menu choose Properties (Figure 10).

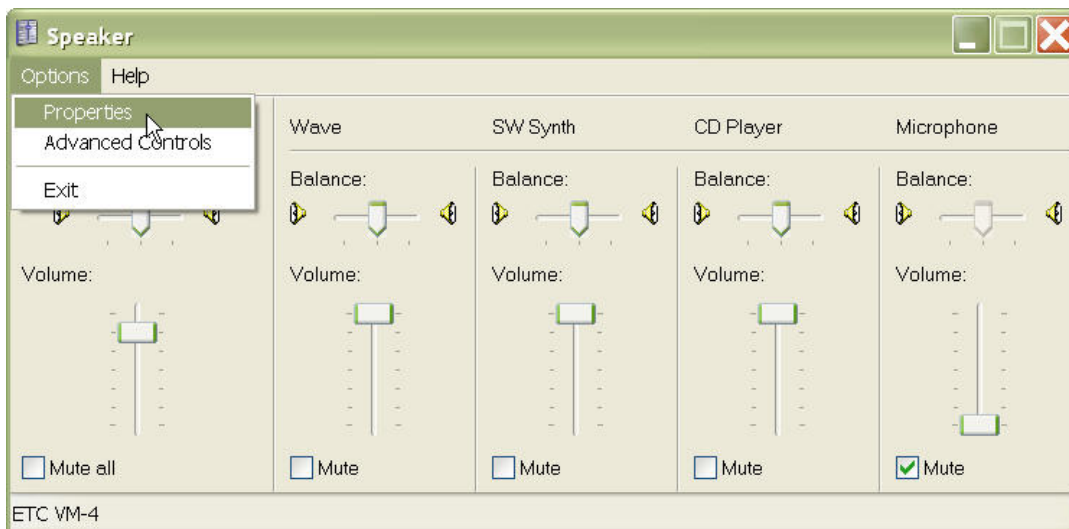


Figure 10

In the Properties window click on the Recording circle (Figure 11). Click the OK button (Figure 12).

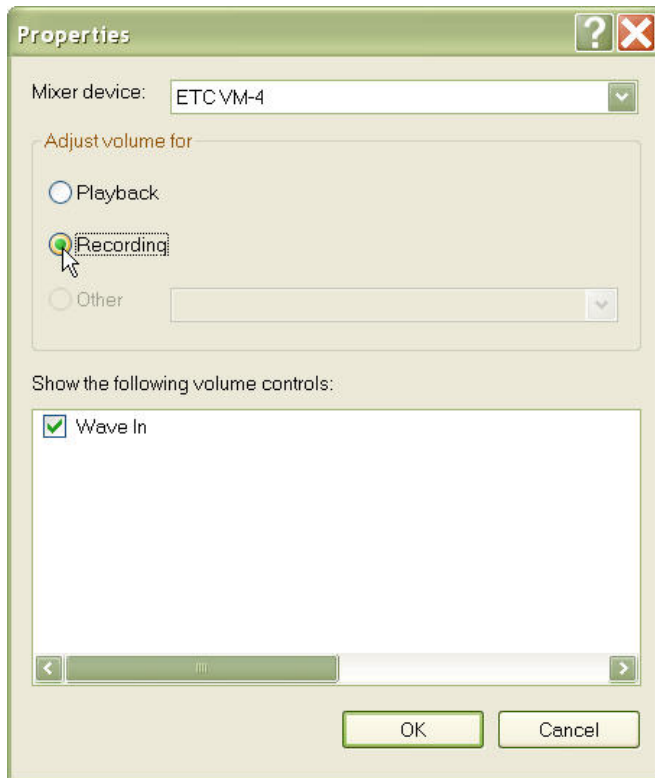


Figure 11

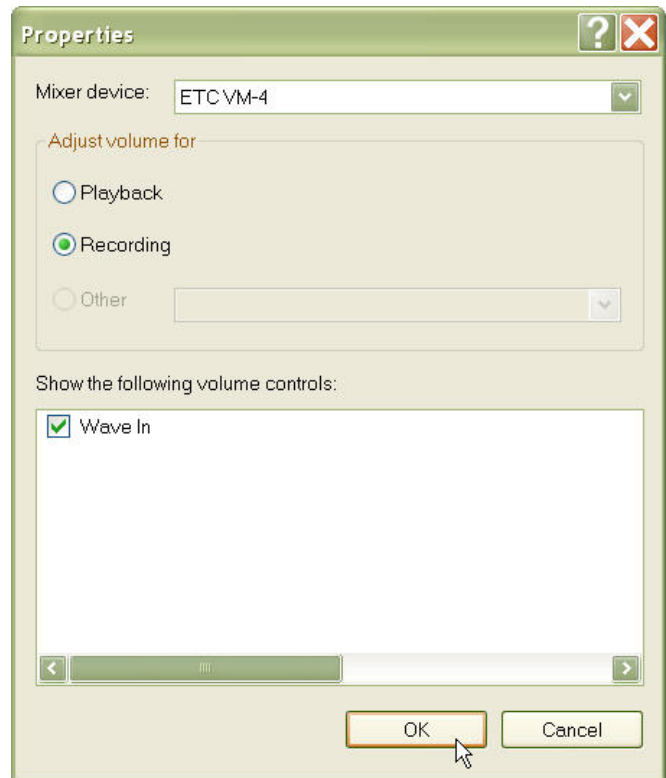


Figure 12

The Wave In (recording level) window will appear. Adjust the volume to the recommended level (Figure 13). Close out the Wave In window (Figure 14), and any other windows left open, and your VCC-28 is ready to be configured with WAVE Dispatch Communicator software.

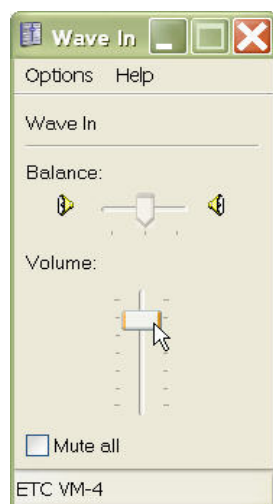


Figure 13

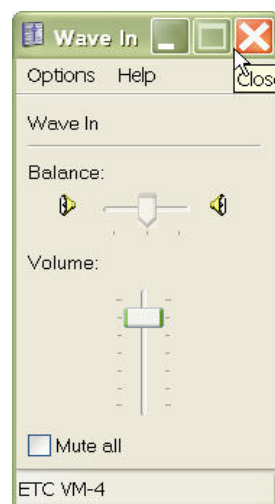


Figure 14

NOTE: The VCC-28 utilizes standard Windows/Linux USB audio device drivers. If the unit is disconnected the settings may revert to default levels. These levels should be checked upon reconnection in the event the VCC-28 becomes suddenly disconnected or loses power.

Windows 7 Audio Device Hardware Configuration

Click on the Sounds icon located in the Control Panel (Figure 15).

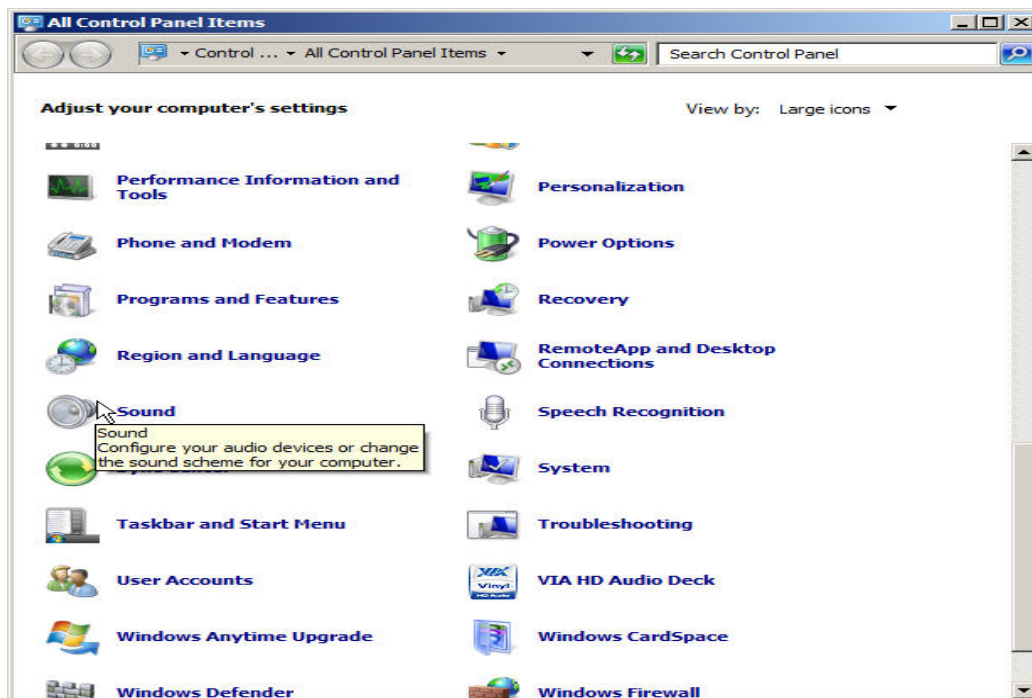


Figure 15

In the Sound window, choose the Playback tab, select Speakers ETC VM-4 Default Device, and click the Properties button (Figure 16). In the Speakers Properties window, choose the Levels tab. Adjust the Speakers level to 90, the Microphone level to 0 (zero), and MUTE the Microphone (Figure 17).

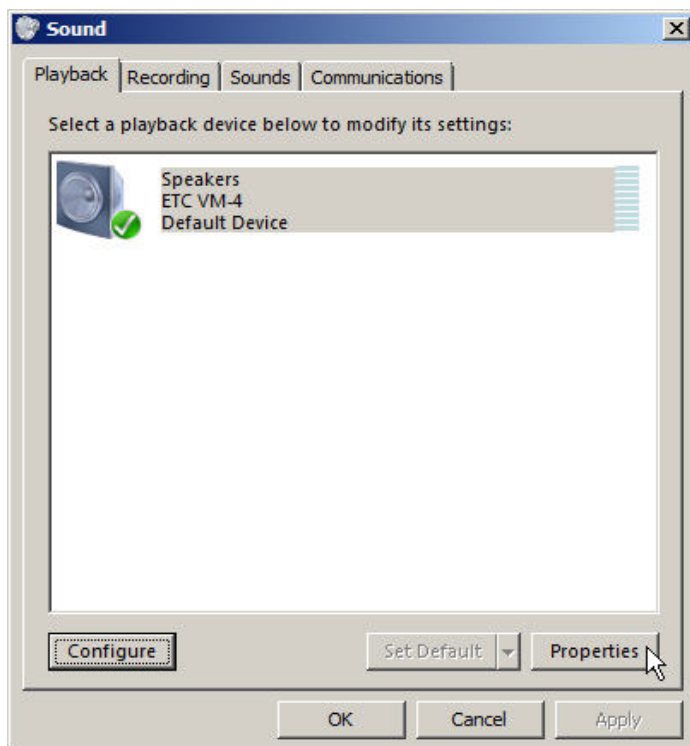


Figure 16

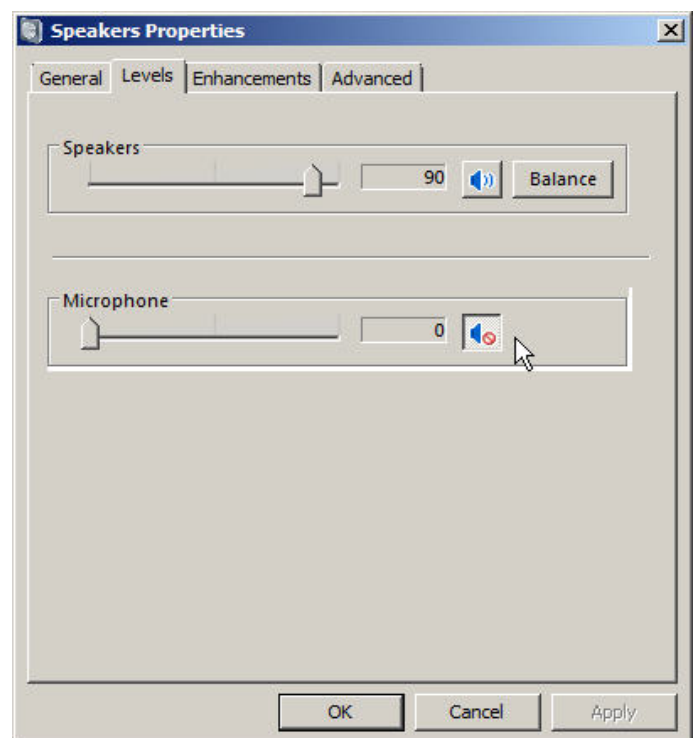
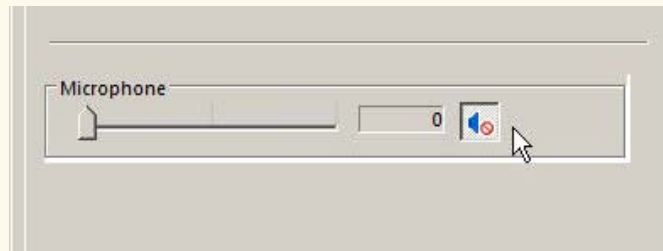


Figure 17

ATTENTION: The microphone speaker icon must be in mute mode. An un-muted microphone will cause echo on the network and down-time for troubleshooting your installation.



Click the OK button to return to the Sound window (Figure 18). In the Sound window, choose the Recording tab, select Microphone ETC VM-4 Default Device, and click the Properties button (Figure 19).

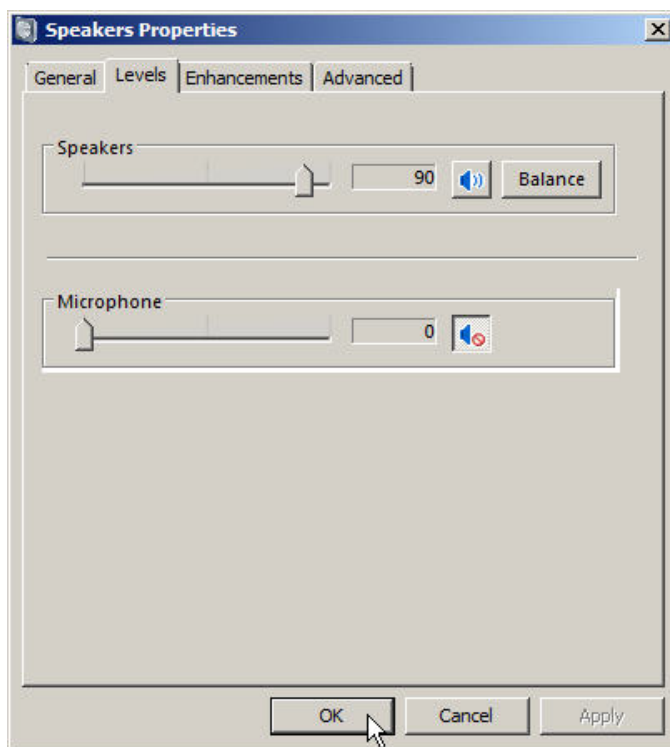


Figure 18

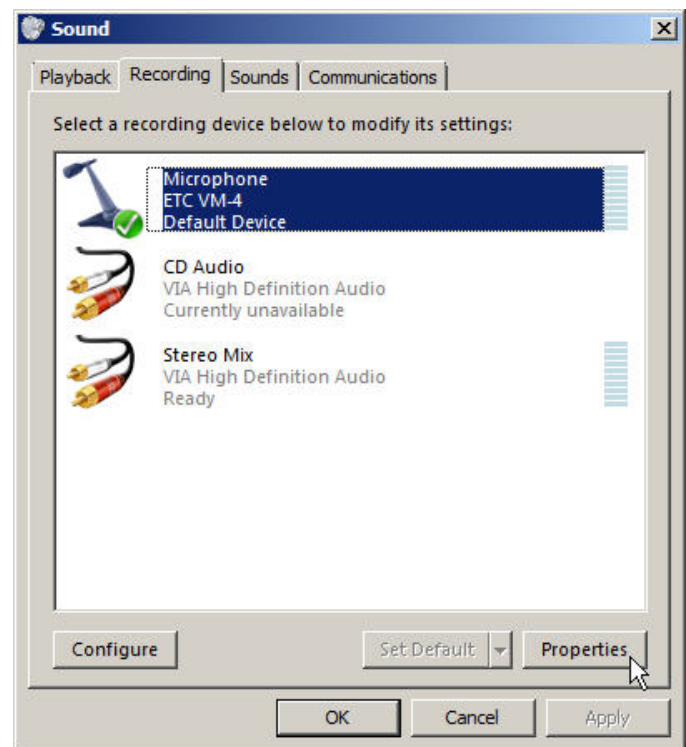


Figure 19

In the Microphone Properties window, choose the Levels tab. Adjust the Microphone level to 80 (Figure 20). Click the OK button to return to the Sound window (Figure 21).

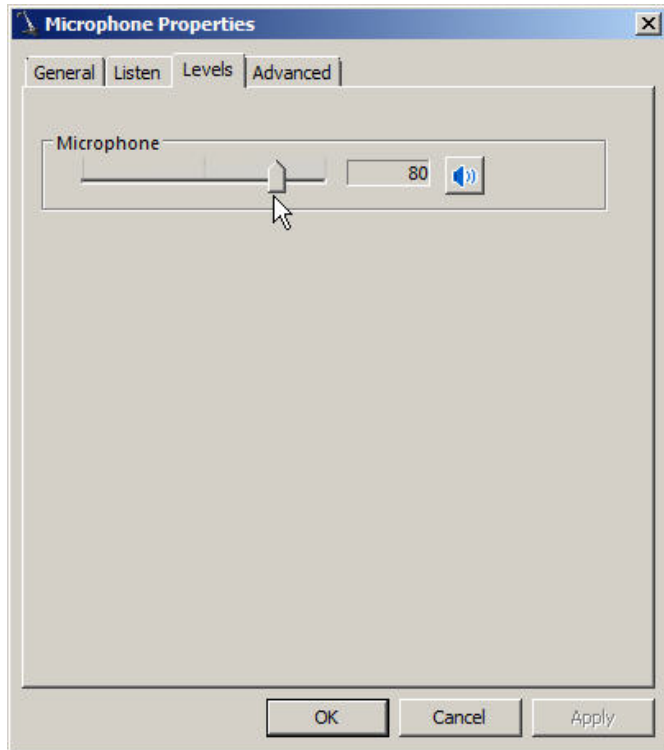


Figure 20

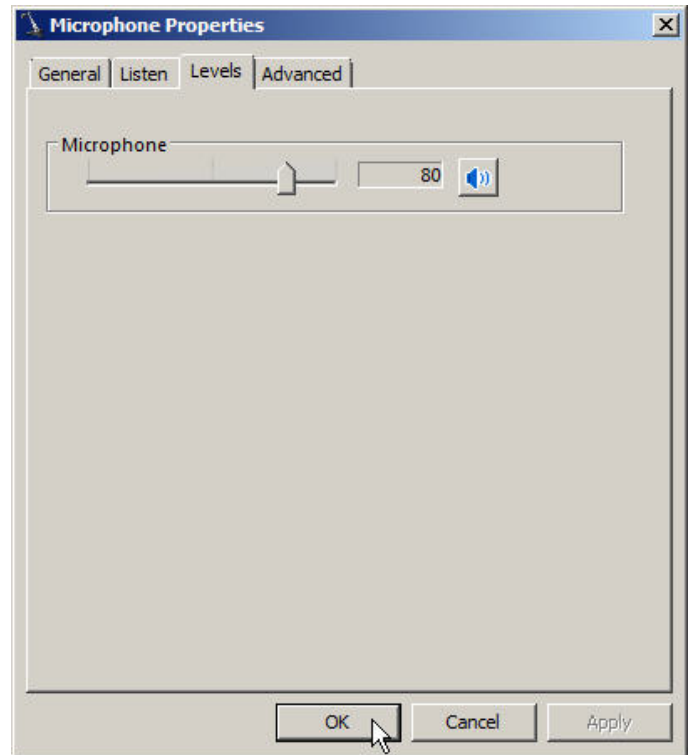


Figure 21

Close out the Sound window, and any other windows left open, and your VCC-28 is ready to be configured with WAVE Dispatch Communicator software.

WAVE Dispatch Communicator Configuration

NOTE: These instructions require the WAVE Management Server to be configured, running, and on the same network as the VCC-28.

The VCC-28 is now ready to be software configured for WAVE. The WAVE Dispatch Communicator can be started by clicking on the WAVE icon. The first screen to appear in WAVE Dispatch Communicator is your WAVE Login screen. Type in the correct User Name: then type in the correct Password:. Click on the Server: drop down menu and choose the correct WAVE Management Server URL or address, then click on the Log In button (Figure 22).

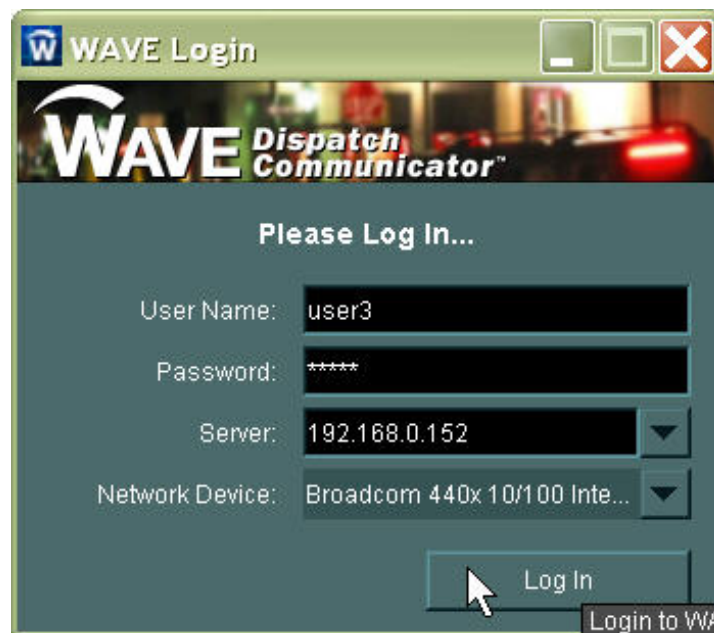


Figure 22

The User Profiles window will open. Choose the correct Profile then choose the correct Zone: from the drop down menu (Figure 23). Click the Select button to enter your choices (Figure 24).

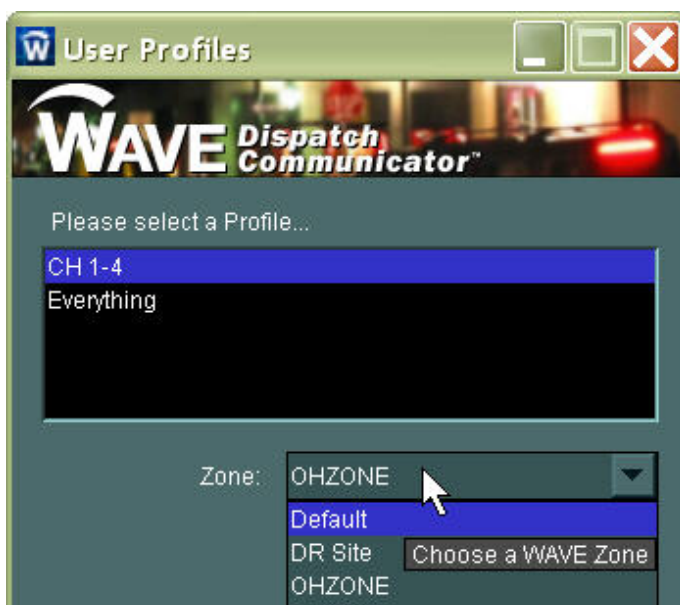


Figure 23

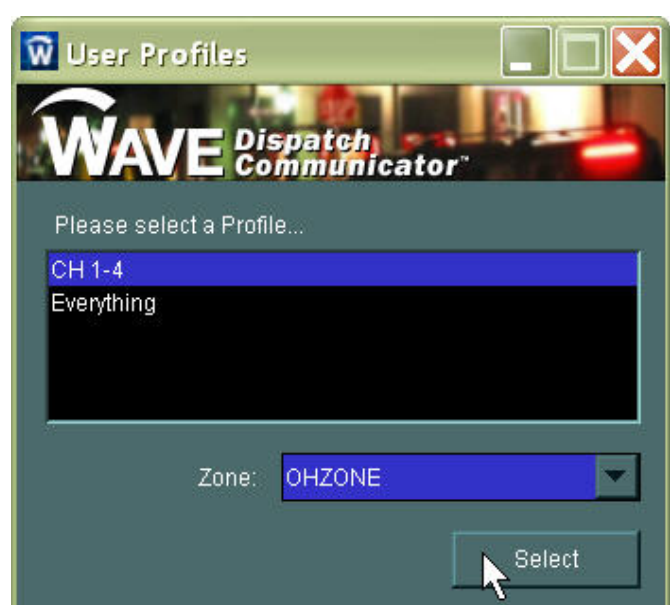


Figure 24

The WAVE Dispatch Communicator window will open (Figure 25).

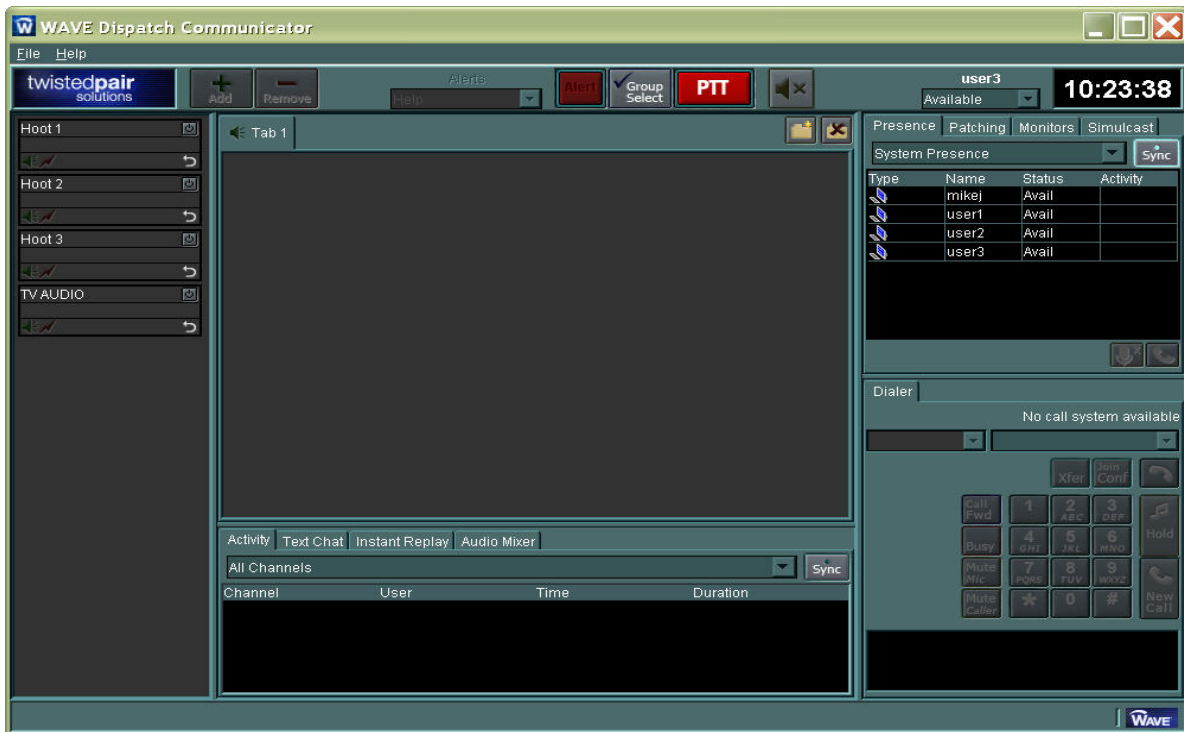


Figure 25

Click on File and choose Settings from the drop down menu (Figure 26).

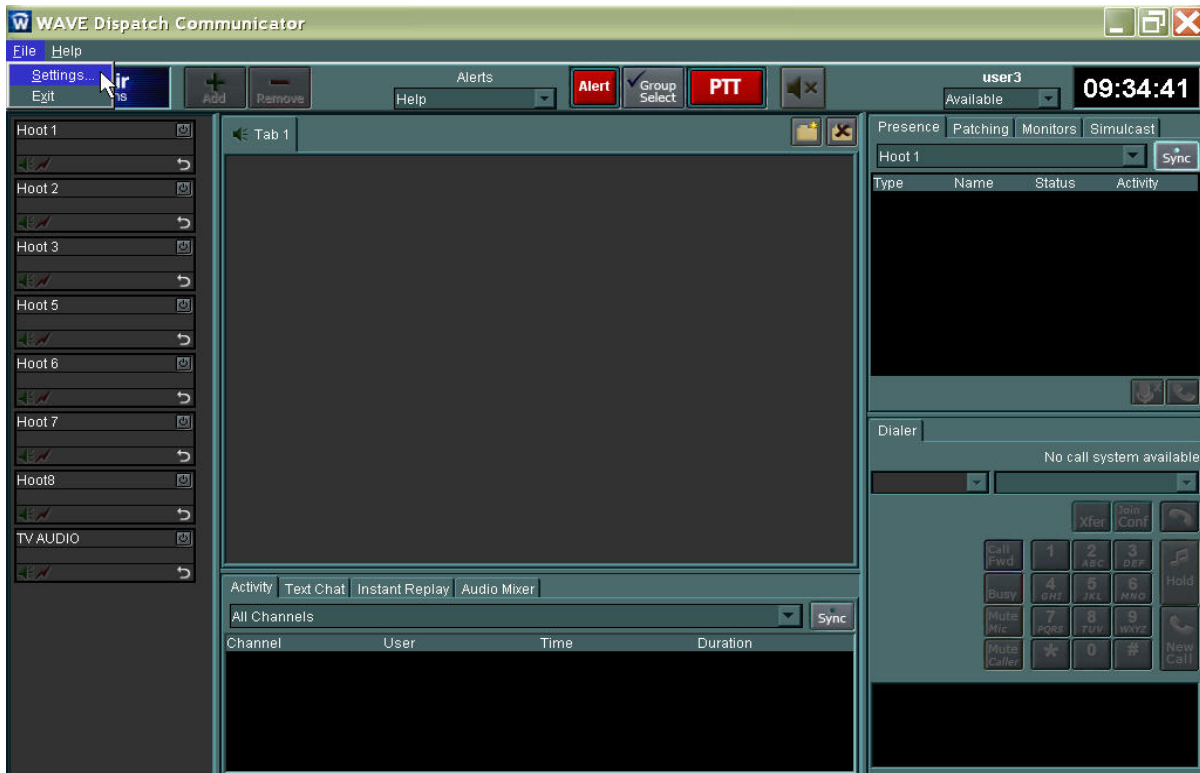


Figure 26

The WAVE Dispatch Communicator Settings window will open. Click on the Devices button (Figure 27) and make sure the Standard Devices: settings are correct. Click on the Hotkeys button.

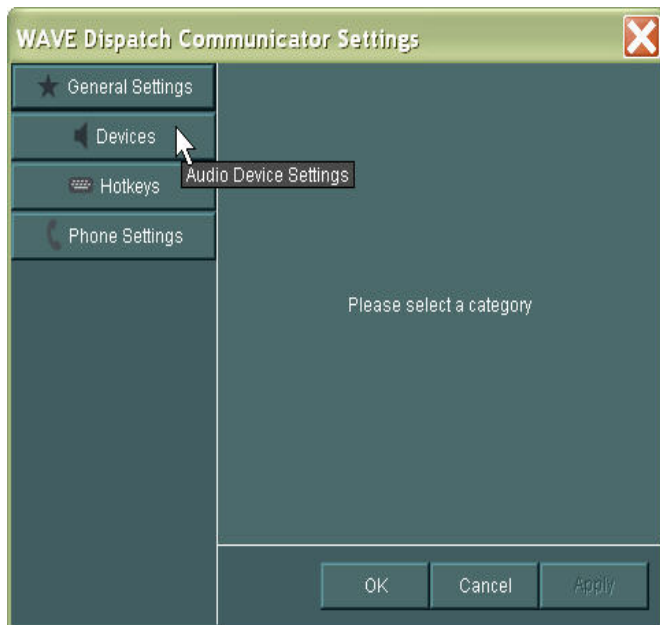


Figure 27

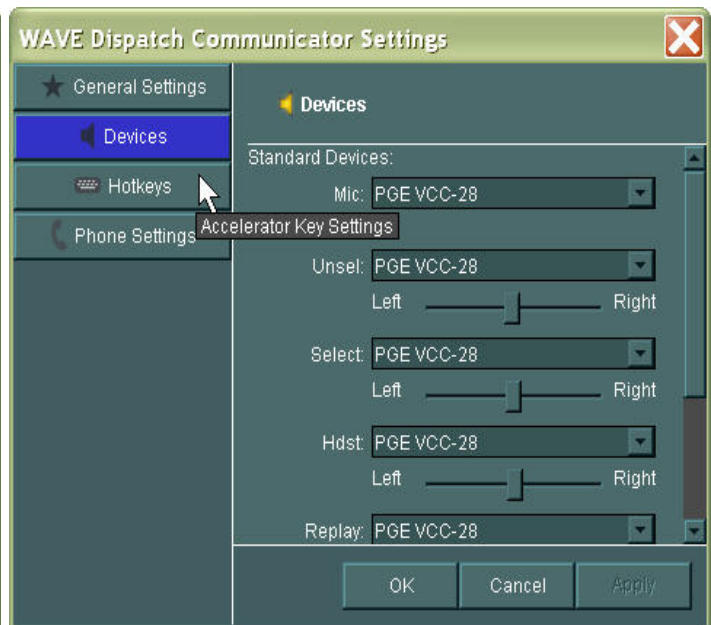


Figure 28

The Hotkeys programming window will open. Click the New button to begin programming a hotkey (Figure 29). When the Key Sequence Selection window opens, the Key sequence area will be empty (Figure 30).

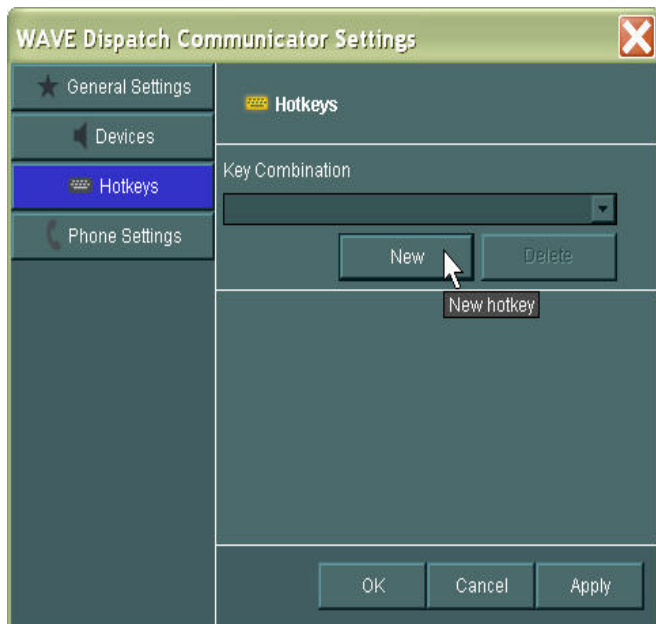


Figure 29

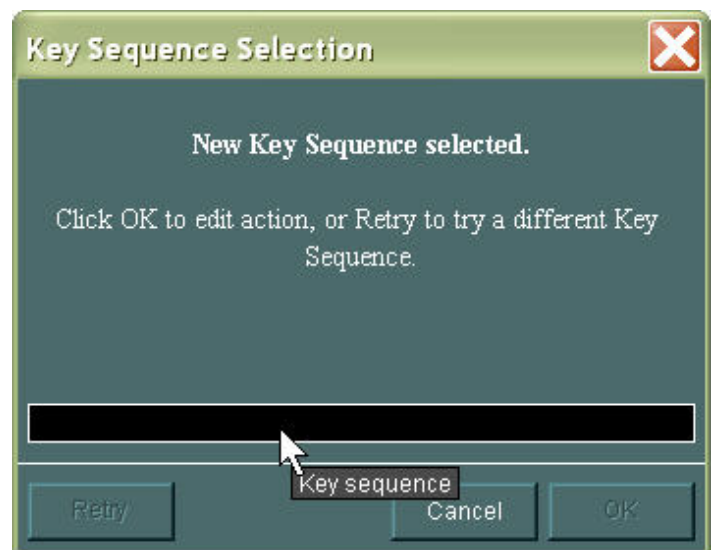


Figure 30

Push the VCC-28 key you want to program (the 2 key in this example) and the factory hot key combination will appear in the Key Combination area (Figure 31). Click the OK button and the WAVE Dispatch Communicator Settings window will open. Choose PTT on Channel from the Action drop down menu (Figure 32).

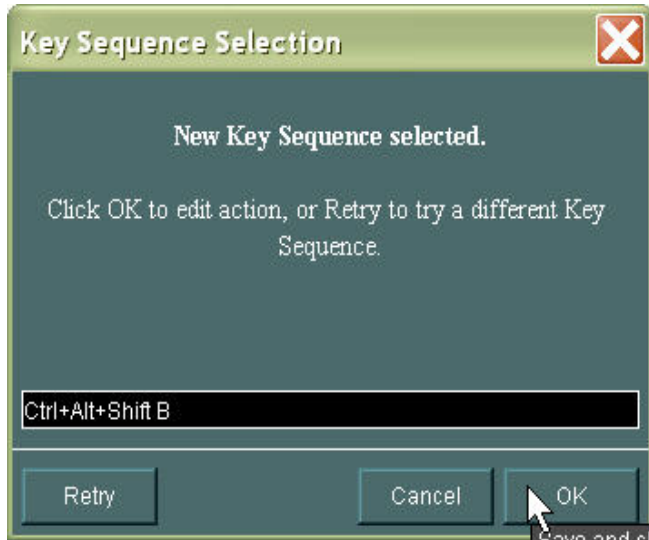


Figure 31

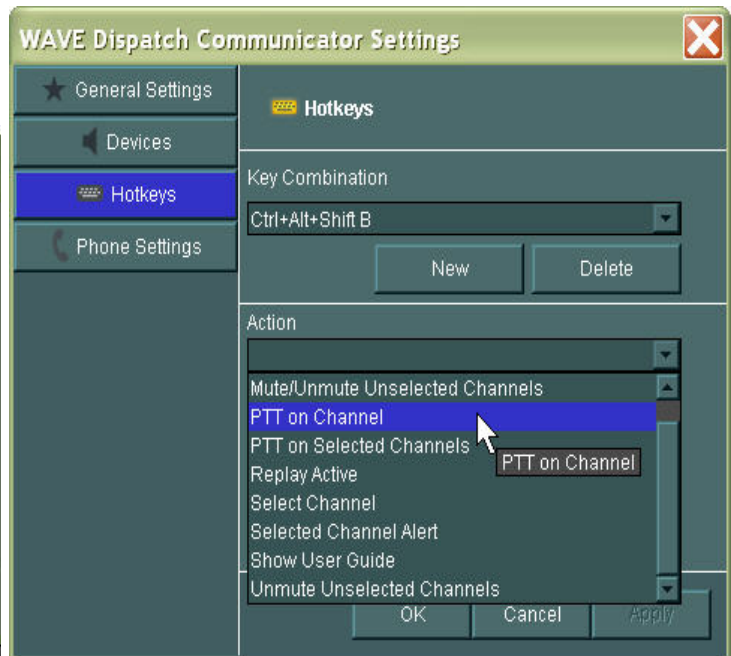


Figure 32

Choose the desired Channel (Hoot 2 in this example) from the drop down menu (Figure 33). Click the Apply button to save the Channel's programming (Figure 34).

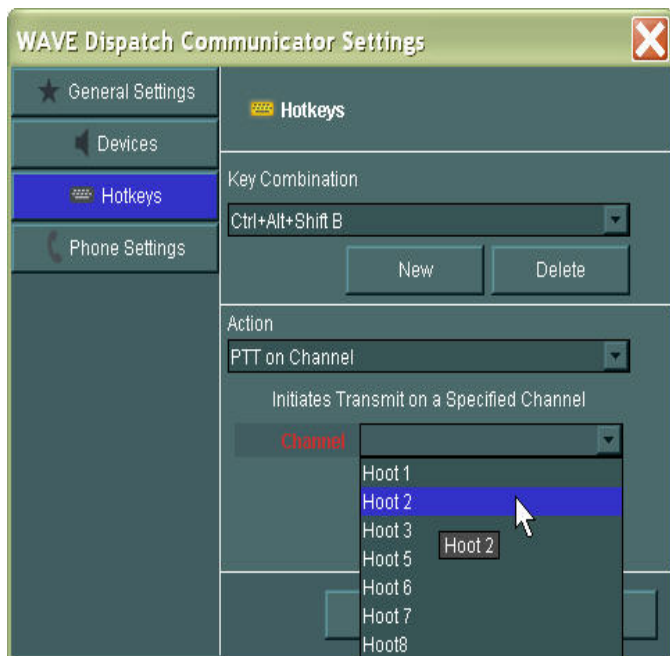


Figure 33

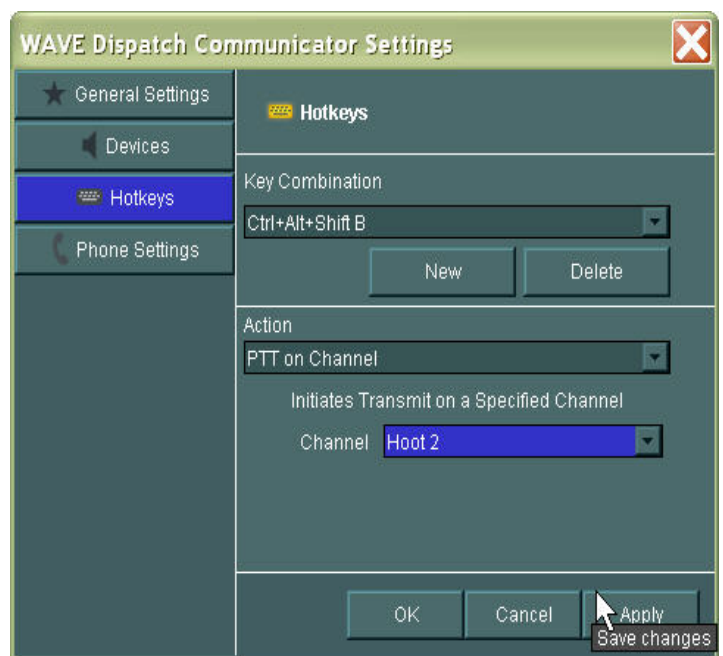


Figure 34

When you have programmed ALL the channels as desired, click the OK button (Figure 35) to close the Settings window. The WAVE Dispatch Communicator window will open (Figure 25 pg 17).

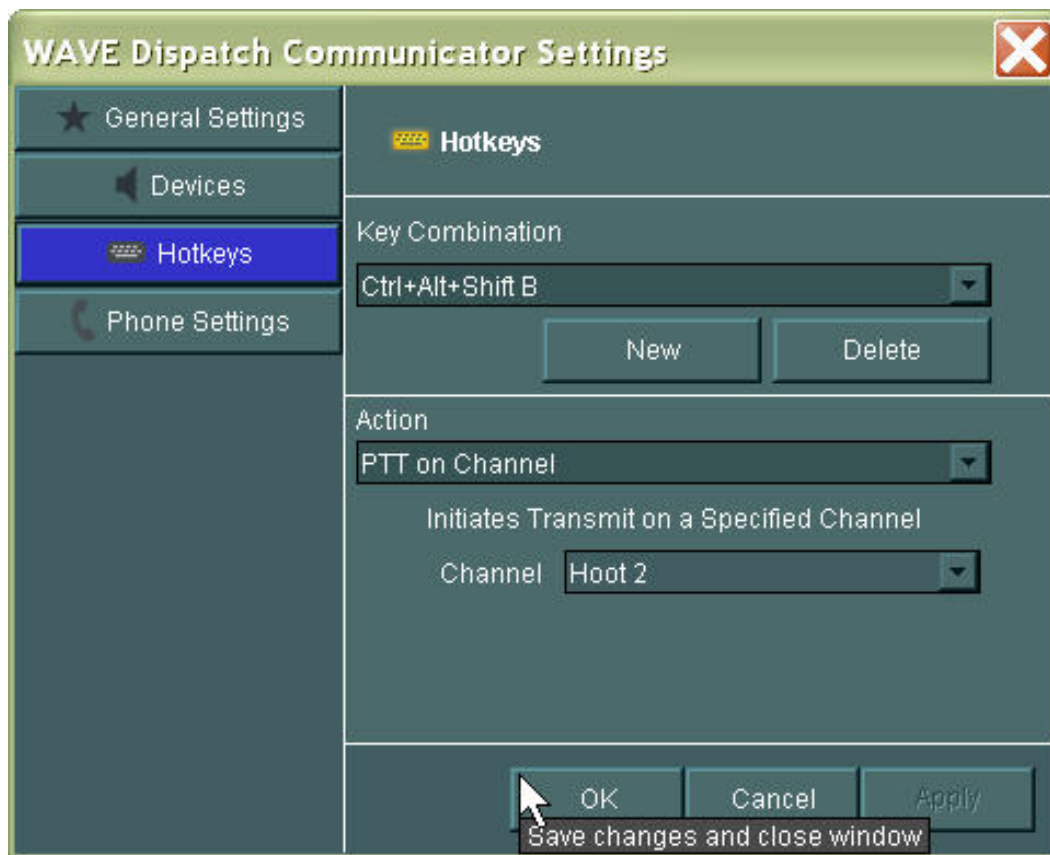


Figure 35

The WAVE literature provided by Twisted Pair Solutions will give you more detailed information.

APPENDIX: Windows USB Audio Device Settings

Microsoft .NET Framework (Option)

Note: The following steps are highly recommended if the microphone will be unplugged on a regular basis.

When a USB audio device is disconnected the volume levels usually revert back to the factory default settings. For maximum ETC equipment operation, these levels need to be set and stay constant. The provided ETC Utility (installed later in this guide) uses Microsoft's .NET Framework 4 to achieve this. Microsoft's .NET Framework 4 is free and can be downloaded at <http://www.microsoft.com/.NET/>

ETC Driver Utility Installation (Option)

By a quirk of Windows, sound devices were never meant to be portable / removable. Some of these drivers date back to Windows-95 era. Since there are no provisions for portability, when a device is disconnected the volume levels usually revert back to what is programmed in the hardware of the soundcard. With the ETC series of USB microphones and sound cards this can be inconvenient.

ETC's Driver Utility makes sure the volume settings remain constant. This is a service running in Windows, not actually a driver in the strict sense. As the volume changes these values are written to the Registry. When a microphone is removed and later re-plugged, the previous volume levels are read out of the registry and set in the Windows mixer panel.

Insert the provided Utility disc and open the USB Products folder (Figure 42). In the USB Products folder, click on the IMPORTANT- READ ME FIRST icon (Figure 42A) and read the enclosed text message (Figure 43). Make sure you copy the COPY TO YOUR DESKTOP zipped folder to your local computer's desktop (Figure 43A).



Figure 42



Figure 42A



Figure 43



Figure 43A

Once you have copied (or moved) the COPY TO YOUR DESKTOP folder, open it and click on the INSTALLER icon (Figure 44). The ETC Volume Control window will open. Click on the Repair ETC Volume Control circle (Figure 45).



Figure 44

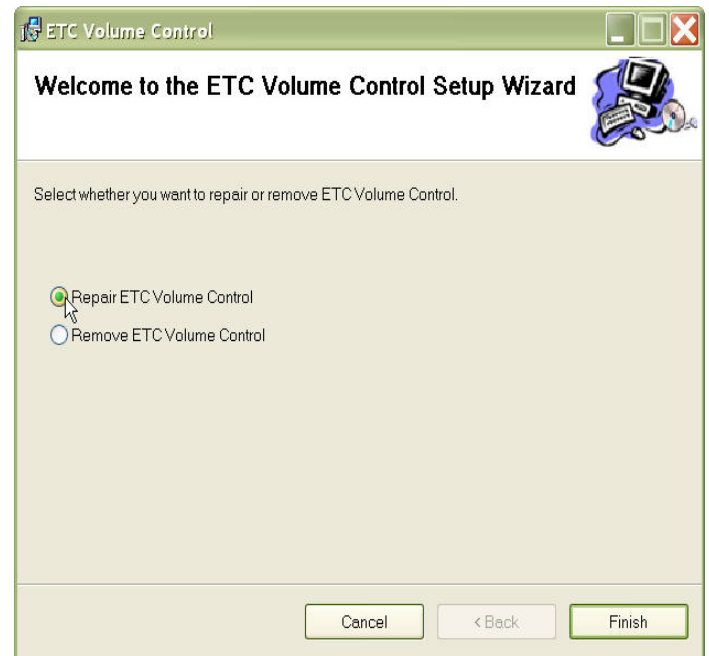


Figure 45

Click the Finish button (Figure 46). When Installation Complete is shown, click the Close button (Figure 47).

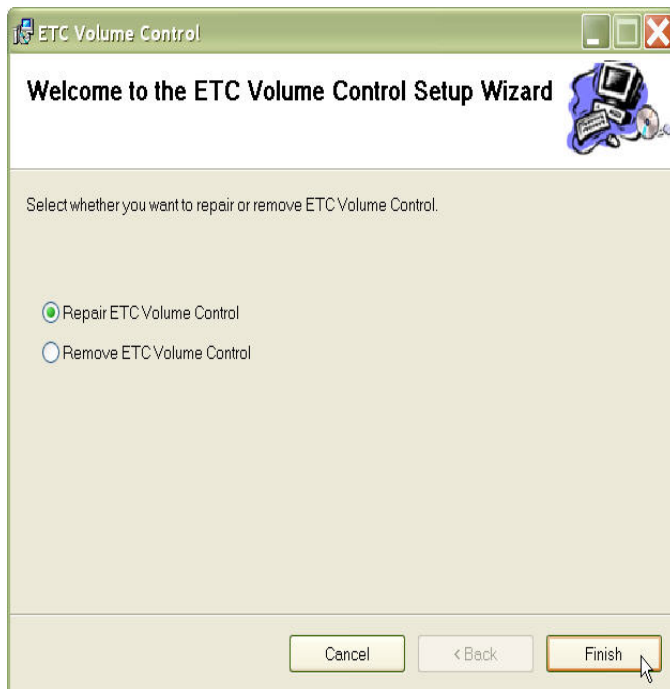


Figure 46

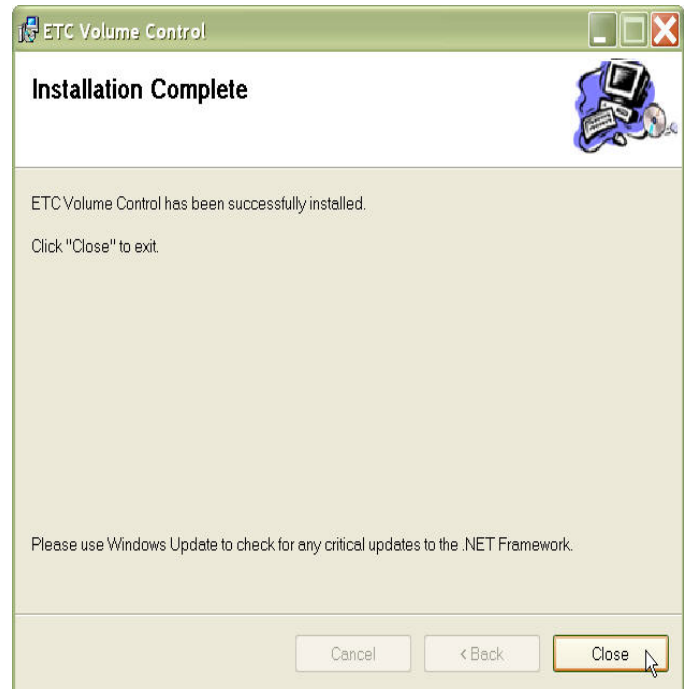


Figure 47

The actual Batch file must be started now. Click on the START icon (Figure 48). The C:\WINDOWS\system32\cmd.exe window will open and run through the process of activating the volume control service (Figure 48). When the process stops, close the window. To verify the volume control service is running, check for the ETC icon in the system tray (the lower right corner of the screen by the clock) (Figure 49).



Figure 48



Figure 48A



Figure 49

USB Microphone Removal Procedure (Option)

By right clicking on the ETC icon in the system tray (Figure 49), the Unplug Microphone dialog box opens. Click on Unplug Microphone (Figure 50). The Volume Control window will open. Click the OK button (Figure 51). A Disconnect Complete message will appear in the Volume Control window (Figure 52).



Figure 50

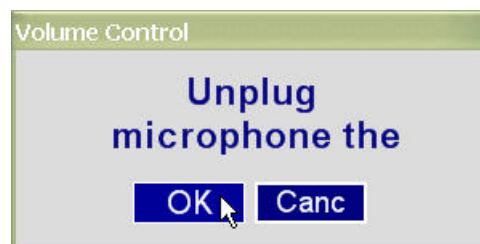


Figure 51

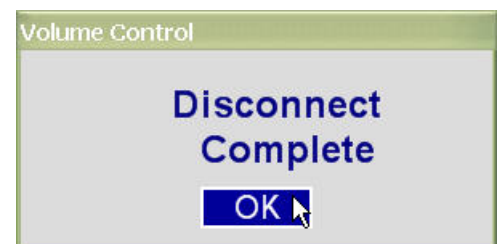


Figure 52

The Disconnect Complete window will self close as soon as the process is successfully stopped. The ETC Volume Control service will automatically restart the next time a microphone is plugged in.

Uninstall ETC Volume Control (Option)

Go to the C:\WINDOWS\system32\cmd.exe directory run “stop.bat” (see Figure 48 pg 20). This stops and removes the service.

In the Windows Control Panel under “Add or Remove Programs” find ETC Volume Control and click the Remove button.(Figure 53).

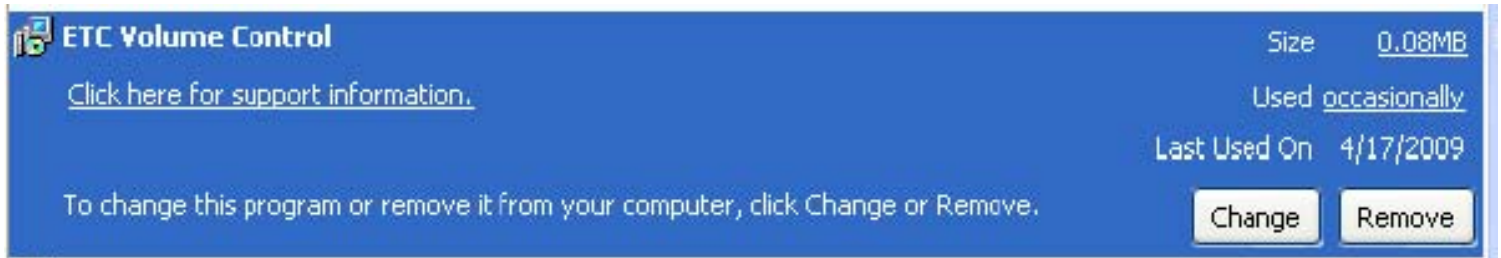


Figure 53

Click the Yes button to remove the program (Figure 54)

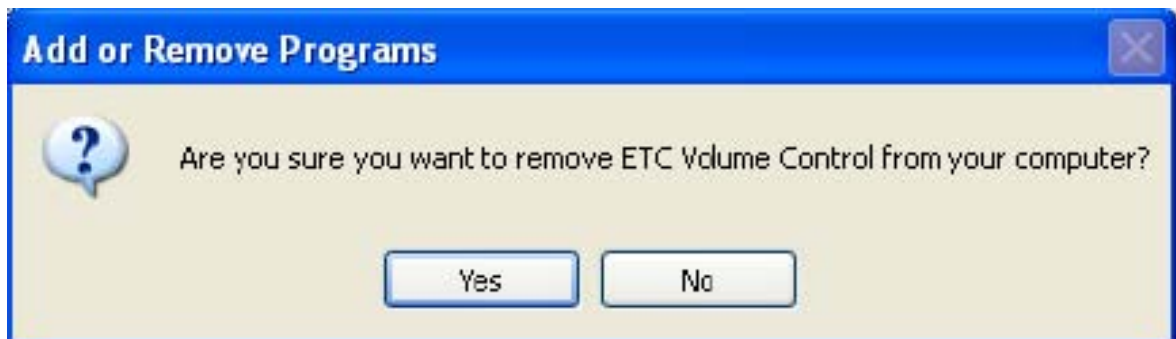


Figure 54

Specifications

Weight: 2.75 lbs
Dimensions: 8.25"L x 6.25"W x 2"H (chassis only)
Frequency Response: 200 Hz - 8 KHz @ -3db
Distortion: .05% at max output
USB Powered

RJ-9 Four wire (stranded) Satin Cord Pin Out (known as tab up - tab down)

Pin 1	Black	Pin 1	Black
Pin 2	Red	Pin 2	Red
Pin 3	Green	Pin 3	Green
Pin 4	Yellow	Pin 4	Yellow

RJ-25 Six wire (stranded) Satin Cord Pin Out (known as tab up - tab down)

Pin 1	Blue	Pin 1	Blue
Pin 2	Yellow	Pin 2	Yellow
Pin 3	Green	Pin 3	Green
Pin 4	Red	Pin 4	Red
Pin 5	Black	Pin 5	Black
Pin 6	White	Pin 6	White

NOTE: The gain settings on the Plantronics CA12CD base need to be set at:

- Microphone Volume = 2
- Head Set Volume = 4

(switches are on the bottom of the base)

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Remedies

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